

## **Apparatus for Closing the Open End of a Foot on a Piece of Tubular Furniture**

### ***Cross-Reference to Related Applications***

Not Applicable.

### ***Statement Regarding Federally Sponsored Research or Development***

5 Not Applicable.

### ***Field of the Invention***

The present invention relates generally to furniture made out of a hollow, tubular material ("tubular furniture"). More specifically, the present invention relates to a cap for use in sealing the foot of a piece of tubular furniture.

### ***Background of the Invention***

Student furniture, such as the desks found in a typical classroom, is often made out of a hollow, tubular material such as steel. The ends of the furniture are thus inherently open with edges exposed, presenting an unattractive, unfinished appearance. Additionally, this open-ended configuration presents a safety hazard, as schoolchildren can get their fingers stuck inside the tubular material or become cut on the unfinished edges of the material.

To remedy the problem, most tubular furniture incorporates a cap inserted into the ends of the tubular material. The cap lends the furniture a finished appearance and prevents students from injuring themselves on the tubular material. These caps typically attach to the tubular material via a one-sided friction fit, though they may also be glued into the tubular material.

20 Additionally, so that the furniture can be easily moved around, a caster or glide is typically attached directly to the foot of the furniture, for example by welding the glide to the metal foot of the furniture.

However, existing caps do not provide a permanent solution to the problems posed by tubular furniture. Ordinary use, and especially the rigors of classroom use, can leave the tubular material misshapen or otherwise damaged. This, in turn, will cause the friction fit of the cap in the tubular material to fail such that the cap breaks free and becomes permanently lost, leaving a once again hazardous and unattractive piece of furniture. Furthermore, casters and glides that are attached directly to the foot of the furniture have a similar tendency to become misshapen, leaving the furniture unstable and difficult to move, as well as difficult to repair where the caster or glide is permanently attached to the piece of furniture.

#### *Summary of the Invention*

It is in view of the above problems that the present invention was developed. The present invention is an apparatus for closing the open end of a foot on a piece of tubular furniture that attaches to the furniture via both a two-sided friction fit and a threaded caster or glide. A butt portion gives the tubular furniture a finished appearance and improves the safety of the furniture, while inner and outer wall portions engage the tubular furniture in a two-sided friction fit. A threaded insert molded into a bottom portion of the cap allows a threaded caster or glide to be inserted through the tubular furniture and the cap, securely attaching the cap to the furniture. In addition to providing easy movement and an additional locking mechanism for the cap, the threaded glide or caster also allows the piece of furniture to be leveled on any surface.

The present invention provides an apparatus for closing an open end of a piece of tubular furniture that cannot easily become detached from the furniture under normal circumstances.

The present invention provides an apparatus for closing an open end of a piece of tubular furniture that will not become detached from the furniture if the furniture becomes damaged or misshapen.

The present invention provides an apparatus for closing an open end of a piece of tubular furniture that integrates a threaded caster or glide as an additional means of securing the cap to the furniture.

Further advantages of the present invention will be apparent from the description below with reference to the accompanying drawings in which like numbers indicate like elements.

#### ***Brief Description of the Drawings***

The accompanying drawings, which are incorporated in and form a part of the specification, illustrate the embodiments of the present invention and together with the description, serve to explain the principles of the invention. In the drawings:

FIGURE 1 is a perspective view of a student desk incorporating the present invention;

FIGURE 2 is a side sectional view of the apparatus attached to the foot of a piece of tubular furniture; and

FIGURE 3 is a bottom view of the apparatus attached to the foot of a piece of tubular furniture.

#### ***Detailed Description of the Invention***

As shown in FIGS. 1 through 3, an apparatus for closing the open end of a foot 15 of a piece of tubular furniture 20 includes a cap 10, a butt portion 22, a bottom 24, an inner wall 26, an outer wall 28, and a threaded insert 30. Threaded insert 30 is molded into bottom 24 and is metallic in the preferred embodiment of the invention. Inner wall 26 and outer wall 28 are

spaced apart so as to engage foot **15** in a two-sided friction fit. Bottom **24**, inner wall portion **26**, and outer wall **28** all extend from butt portion **22**.

In the embodiment of the invention illustrated by the figures, cap **10** and foot **15** are rectangular in shape when viewed end-on. Inner wall **26** and outer wall **28** extend from three of the four sides of butt portion **22**, and bottom **24** extends from the fourth side, all in a plane substantially perpendicular to that of butt portion **22**. However, it will be obvious to one skilled in the art that cap **10** can be adapted to fit any other shape of foot **15**.

When cap **10** is inserted into foot **15**, butt portion **22** covers the exposed end of foot **15**, giving furniture **20** a finished appearance and making it safe for use by students of all ages. Inner wall **26** and outer wall **28** engage three sides **32** (best seen in figure 2), **34**, and **36** (best seen in figure 3) of foot **15** in a two-sided friction fit, while bottom **24** lies along the interior of a fourth side **38** to form a single-sided friction fit. The two-sided friction fit together with a single-sided friction fit keeps cap **10** more securely attached to foot **15** than the one-sided friction fit of existing caps. However, it is pointed out that the single-sided friction fit between bottom **24** and fourth side **38** is not required to attach cap **10** to foot **15**.

To further secure cap **10** to foot **15**, a threaded member **40**, such as a caster or a glide (shown), is then inserted through side **38** and operatively engaged with threaded insert **30**, keeping cap **10** securely attached to foot **15** even if the two-sided friction fit fails. Threaded member **40** also allows furniture **20** to be easily moved. In addition, by screwing and unscrewing threaded member **40** in small increments, furniture **20** can be leveled on any surface. Furthermore, a threaded member **40** is much easier to repair or replace than those movement means permanently connected to tubular furniture.

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